

WHAT IS CLAIMED IS:

1. A fiber optic transceiver with safety features, comprising:
  - a laser transmitter;
  - a photodiode receiver; and
  - a controller,  
wherein the controller comprises:
    - a memory, including one or more memory arrays, configured to store digital equivalents of predetermined setpoints;
    - communication circuitry configured to receive an input signal associated with operation of said fiber optic transceiver;
    - comparison logic configured to compare said input signal to at least one of said predetermined setpoints and to generate an alarm flag if said input signal conflicts with said setpoint, wherein the alarm flag is stored in a predefined location in the memory;
    - an interface for allowing a host to read from and write to host-specified locations within the memory, including the predefined location storing the alarm flag; and
    - operation disable circuitry configured to disable operation of said fiber optic transceiver in response to a signal, wherein the signal is based on said alarm flag.
2. The fiber optic transceiver of claim 1, wherein the controller further comprises conversion circuitry for converting the input signal from analog and digital, wherein the digital input signal is a 16-bit number.
3. The fiber optic transceiver of claim 1, wherein the digital equivalents are 16-bit numbers.
4. The fiber optic transceiver of claim 1, wherein the operation disable circuitry is responsive to a software operation.
5. The fiber optic transceiver of claim 1, wherein the operation disable circuitry disables operation of the fiber optic transceiver in response to a signal sent to a disable pin in the fiber optic transceiver.
6. The fiber optic transceiver of claim 1, wherein said predetermined setpoints are dependent on a temperature of said fiber optic transceiver.

7. The fiber optic transceiver of claim 1, wherein the interface allows the host to read directly from and write directly to host-specified locations within the memory, including the predefined location storing the alarm flag.
8. A fiber optic transceiver with safety features, comprising:
  - a laser transmitter;
  - a photodiode receiver; and
  - a controller,
    - wherein the controller comprises:
      - a memory, including one or more memory arrays, configured to store a first set of digital equivalents of a plurality of predetermined setpoints for a bias current associated with a transmitter within the fiber optic transceiver, a second set of digital equivalents of a plurality of predetermined setpoints for an output power associated with the transmitter within the fiber optic transceiver, and a third set of digital equivalents of a plurality of predetermined setpoints for a received optical power associated with a receiver within the fiber optic transceiver;
      - communication circuitry configured to receive input signals associated with operation of said fiber optic transceiver, wherein the input signals include the bias current, the output power and the received optical power; and
      - comparison logic configured to compare the bias current to each digital equivalent in the first set of digital equivalents, the output power to each digital equivalent in the second set of digital equivalents and the received optical power to each digital equivalent in the third set of digital equivalents, and to generate an alarm flag if said input signals conflict with at least one of the first set of digital equivalents, second set of digital equivalents and third set of digital equivalents, respectively.
9. The fiber optic transceiver of claim 8, further comprising:
  - operation disable circuitry configured to disable operation of said fiber optic transceiver in response to a signal, wherein the signal is based on said alarm flag.
10. The fiber optic transceiver of claim 8, further comprising:
  - fault control circuitry configured to control operation of said fiber optic transceiver based on said alarm flag.

11. The fiber optic transceiver of claim 8, further comprising conversion circuitry for converting between analog and digital.
12. The fiber optic transceiver of claim 11, wherein said conversion circuitry is configured to convert said input signal from analog to digital using a predetermined calibration factor.
13. The fiber optic transceiver of claim 11, wherein said conversion circuitry is configured to convert said at least one of said predetermined setpoints from digital to analog value.
14. The fiber optic transceiver of claim 11, wherein said conversion circuitry is a digital comparator or an analog comparator.
15. The fiber optic transceiver of claim 11, further comprising an internal transmitter disable connection for disabling at least the laser transmitter of said fiber optic transceiver based on said alarm flag.
16. A fiber optic transceiver with safety features, comprising:
  - a laser transmitter;
  - a photodiode receiver; and
  - a controller,wherein the controller comprises:
  - a memory, including one or more memory arrays, configured to store a digital equivalent of a predetermined low setpoint and a digital equivalent of a predetermined high setpoint in a memory within a fiber optic transceiver;
  - communication circuitry configured to receive an input signal associated with operation of said fiber optic transceiver; and
  - comparison logic configured to compare said input signal to the digital equivalent of the predetermined low setpoint and to the digital equivalent of the predetermined high setpoint, and to generate an alarm flag if said input signal conflicts with either the digital equivalent of the predetermined low setpoint or the digital equivalent of the predetermined high setpoint.
17. The fiber optic transceiver of claim 16, further comprising:

operation disable circuitry configured to disable operation of said fiber optic transceiver in response to a signal, wherein the signal is based on said alarm flag.

18. The fiber optic transceiver of claim 16, further comprising conversion circuitry for converting the input signal from analog and digital, wherein the digital input signal is a 16-bit number.

19. The fiber optic transceiver of claim 16, wherein the digital equivalents are 16-bit numbers.

20. The fiber optic transceiver of claim 16, wherein the operation disable circuitry is responsive to a software operation.

21. The fiber optic transceiver of claim 16, wherein the operation disable circuitry disables operation of the fiber optic transceiver in response to a signal sent to a disable pin in the fiber optic transceiver.

22. The fiber optic transceiver of claim 16, wherein said predetermined setpoints are dependent on a temperature of said fiber optic transceiver.